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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/722,512	11/28/2003	Yasushi Shinjo	245842US0RDDIV	7665

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OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.
1940 DUKE STREET
ALEXANDRIA, VA 22314

EXAMINER

RODEE, CHRISTOPHER D

ART UNIT	PAPER NUMBER
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1756

DATE MAILED: 08/05/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/722,512

Applicant(s)

SHINJO ET AL.

Examiner

Christopher RoDee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 June 2004.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 12,13,20-25 and 27-37 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 12,13,20-23,25 and 27-37 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 20 and 21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 20 and 21 are indefinite because it is unclear what the first stage pigment is in the process of base claim 12. The base claim does not specify any material identified as being a first stage pigment nor does it disclose a step as being a "first stage". Thus the artisan would not know what the first stage pigment is in the instant claims.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 34 and 35 are rejected under 35 U.S.C. 102(b) as being anticipated by Lu *et al.* in US Patent 4,042,292 considered with *Handbook of Imaging Materials* to Diamond, p. 233.

Lu discloses a liquid developer formed by dispersing small resin particles in an inert, non-volatile organic carrier (col. 3, l. 54-68). The carrier liquid does not dissolve the organic

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resin particles or pigments suspended therein. The carrier liquid is disclosed as having high resistivity (col. 4, l. 43-51). As seen in the examples, the resin particles and the colorant are dispersed in the carrier liquid. The reference also states that the colorant particles may be "adhered on the surface of the resin particles" (col. 6, l. 5-7). Lechtin is a known charge director, and is disclosed for inclusion as a dispersing agent in the liquid developer (see Lu: col. 6, l. 36; Diamond, p. 233, § 6.2.3).

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 36 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suda *et al.* in US Patent Application Publication 2002/0006571 .

This rejection was presented in the last Office action. In response to that rejection applicants take the position, "Suda *et al* simply require that the inorganic particles be attached or impregnated in at least the surface region. Suda *et al* does not exclude both their colorant and inorganic particles being uniformly dispersed throughout the toner particle. Indeed, this appears to be the most likely scenario for Example 1."

The Examiner has carefully considered applicant's position, but cannot agree with applicant's position that the applied reference does not suggest the claimed invention. Suda specifically teaches that the surface of the toner particles have inorganic particles attached or impregnated as a result of placing resin and colorant particles together in the liquid medium in a container, followed by stirring, heating, and cooling. This would suggest to the artisan that there

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are more of the inorganic particles (i.e., a colorant) at the surface of the particles than at the interior. This is the same structure as required by the instant claims.

Because the reference clearly teaches inorganic particles on the surface of the resin particles, the artisan would understand that there are more pigment particles on the surface of the toner than in the interior. Applicants are correct that the reference does not exclude both their colorant and inorganic particles being uniformly dispersed throughout the toner particle. However, the reference clearly also teaches that the inorganic particles may also be present only at the exterior of the resin particle or in a greater number in this location. The rejection is still seen as proper and is maintained.

The indicated allowability of claims 12, 13, 20-23, 25, 27-29, 32, and 33 is withdrawn in view of the newly discovered reference(s) to Lu *et al.* in US Patent 4,042,292. Rejections based on the newly cited reference(s) follow.

Claims 12, 20-23, 25, and 27-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lu *et al.* in US Patent 4,042,292 in view of *Handbook of Imaging Materials* to Diamond, pp. 231-236.

Lu was described above and that discussion is incorporated here. In addition, Lu teaches that the resin particles should have a Tg of not greater than 35 °C (col. 4, l. 52-62), which is at or below the ambient temperature at which the toners are used. The reference also states that the colorant particles may be dispersed in the organic liquids of the developer (col. 6, l. 5-9). Various organic resins are disclosed including acrylic resins (col. 5, l. 13-53). Carbon black colorants are specifically disclosed (col. 5, l. 61) as are blue pigments (col. 10, l. 45). Lu does not disclose any heating of the components during the preparation process. The

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reference does not appear to explicitly require a step of milling the components, but clearly the resin particles and the colorant particles must be dispersed in the liquid. The resin is specifically disclosed as being "comminuted" (col. 5, l. 46-53), which would indicate to the artisan that it is broken up during the preparation process.

Diamond teaches milling as a conventional procedure in the formation of liquid developers. The resin, colorant, and other components are dispersed in the liquid through the use of the mill (p. 234). Diamond also teaches useful colorants for liquid developers, such as those specified in Table 6.2 (pp. 234-5), and discloses useful aliphatic hydrocarbon carrier liquids (pp. 231-2), such as the isoparaffins disclosed in Table 6.1. Suitable charge directors are also disclosed as common additives to the liquid developers.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to mill the resin and colorant disclosed in Lu because Lu requires a dispersion of the resin particles and the colorant and the artisan would recognize, in view of Diamond's teachings, the milling of these components to give a dispersion is conventional in the art. The artisan would also have found it obvious to use conventional colorant(s), dispersant(s) (i.e., carrier liquids), and charge director(s), as discussed in Diamond, to produce a liquid toner because Lu teaches these types of components as effective in liquid developers and Diamond teaches materials for each of these functions that are well known in the art. The artisan would also have found it obvious to mill the components below the resin T_g, such as the specifically disclosed 35 °C, because Lu does not disclose the need to heat the components during dispersion. Based on the disclosure, the artisan would prepare the liquid developer at room temperature, which is below 35 °C. The artisan would also have found it obvious to produce the toner with small colorant particles, such as sizes below the resin particle size, because small colorants would give a finer image. Further, the reference teaches that is some embodiments

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the colorants are present on or in the resin particles (col. 6), which would suggest to the artisan that they are smaller than the resin particles. Choice of a specific size would appear to be within the level of skill of the artisan to give a detailed image.

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lu *et al.* in US Patent 4,042,292 in view of *Handbook of Imaging Materials* to Diamond, pp. 231-236 as applied to claims 12, 20-23, 25, and 27-31 above, and further in view of Yoon in US Patent 6,287,742. Lu was described above. The reference does not disclose the preliminary milling step as claimed, but the reference does teach that the resin is "comminuted" (col. 5, l. 46-53), which would indicate to the artisan that it is broken up during the preparation process.

Yoon teaches that resin particles can be comminuted in a liquid in which the toner resin is insoluble and at a temperature above the Tg of the resin (col. 3, l. 2-27; col. 3, l. 54-64). Yoon also teach milling of resin particles before dispersion in a liquid to give particles of the desired size.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to perform comminute the resin particles of Lu in a mill because Yoon teaches that particles can be comminuted in a liquid at a temperature above the resin Tg to give particles of the desired size. These particles could then be added to the dispersant of Lu along with the colorant to give the liquid developer disclosed by Lu.

Claims 32 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lu *et al.* in US Patent 4,042,292 in view of *Handbook of Imaging Materials* to Diamond, pp. 231-236 as applied to claims 12, 20-23, 25, and 27-31 above, and further in view of Kato in US Patent 5,409,795.

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Lu was described above. Lu does not disclose the addition of wax to the liquid developer, but Kato teaches that it is known in the art to add olefin waxes to liquid developer composition as these compounds improve charging and image characteristics, as is well known in the art (col. 24, l. 3-11). The artisan would readily recognize paraffin wax, polyethylene wax, and polypropylene wax as common types of olefin waxes.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include an olefin wax in the liquid developer of Lu because Lu teaches that additives may be used in the liquid developer and Kato teaches olefin waxes improve charging and image characteristics.

Allowable Subject Matter

Claim 24 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Those rejections not repeated are overcome by applicants' amendments and remarks.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher RoDee whose telephone number is 571-272-1388. The examiner can normally be reached on most weekdays from 6:00 to 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

cdr
29 July 2004


CHRISTOPHER RODEE
PRIMARY EXAMINER